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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

George Gao et al.

Serial No.: 10/686,290

Filed: October 15, 2003

For: INSULATION SYSTEM FOR OIL
FILLED ENVIRONMENTS

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Group Art Unit: 2832

Examiner: Nguyen, Tuyen T.

Atty. Docket: 131026-1/YOD/WOL
GERD:0613

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January 29, 2007 Date	 Lynda Howell

Sir:

APPEAL BRIEF PURSUANT TO 37 C.F.R. §§ 41.31 AND 41.37

This Appeal Brief is being filed in furtherance to the Notice of Appeal mailed on November 13, 2006, received by the Patent Office on November 16, 2006, and the Panel Decision mailed on December 27, 2006.

The Commissioner is authorized to charge the requisite fee of \$500.00, and any additional fees which may be necessary to advance prosecution of the present application, to Account No. 07-0868, Order No. 131026-1/YOD (GERD:0613).

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1. **REAL PARTY IN INTEREST**

The real party in interest is General Electric Company, the Assignee of the above-referenced application by virtue of the Assignment to General Electric Company by George Gao, Clive William Reed, Thangavelu Asokan, Paul Alfred Siemers, and Santanu Singha, recorded at reel 014617, frame 0794, and dated October 15, 2003. Accordingly, General Electric Company will be directly affected by the Board's decision in the pending appeal.

2. **RELATED APPEALS AND INTERFERENCES**

Appellants are unaware of any other appeals or interferences related to this Appeal.

3. **STATUS OF CLAIMS**

Claims 1-4, 6-8, and 29-44 are currently pending and under final rejection and, thus, are the subject of this appeal. Claims 5, 9-28 were earlier cancelled.

4. **STATUS OF AMENDMENTS**

There are no outstanding amendments to be considered by the Board.

5. **SUMMARY OF CLAIMED SUBJECT MATTER**

The present invention relates generally to insulation systems for oil filled environments, oil filled electric devices, or oil filled transformers, etc. *See* Application, pages 1-2, paragraphs 4-8. The insulation system includes a plurality of insulating units, each of the plurality of insulating units including a first layer of insulating material and a second layer of insulating material. *See id.* At least one of the first and second layers includes a polymeric material. *See id.* The insulating units are positioned with respect to each other such that the second layer of one insulating unit is adjacent to the first layer of another insulating unit. *See id.*

The present application contains five independent claims, namely, claims 1, 29, 33, 38, and 42, which are the subject of this Appeal. The subject matter of these five independent claims is summarized below. Further, the subject matter of dependent claim 3 is also summarized.

With regard to the aspect of the invention set forth in independent claim 1, discussions of the recited features of claim 1 can be found at least in the locations in the specification and drawings cited below. By way of example, an embodiment in accordance with the present invention relates to an insulation system (*e.g.*, 10) for an oil filled environment. *See, e.g., id.* at page 4, paragraph 21; *see also*, page 12, paragraph 52; *see also*, FIG. 1. The insulation system (*e.g.*, 10) includes a plurality of insulating units (*e.g.*, 22, 24, 26, 28, 30). *See, e.g., id.* at page 12, paragraph 53; *see also*, FIG. 2. Each of the plurality of insulating units (*e.g.*, 22, 24, 26, 28, 30) includes a first layer of polymeric material (*e.g.*, 12) and a second layer of non-polymeric material (*e.g.*, 14). *See, e.g., id.* at page 12, paragraphs 51, 53; *see also*, page 13, paragraph 56; *see also*, FIGs. 2,4. The insulating units (*e.g.*, 22, 24, 26, 28, 30) are positioned with respect to each other such that the second layer of non-polymeric material (*e.g.*, 14) of one insulating unit (*e.g.*, 22, 24, 26, 28, 30) is adjacent to the first layer of polymeric material (*e.g.*, 12) of another insulating unit (*e.g.*, 22, 24, 26, 28, 30). *See, e.g., id.* at pages 4-5, paragraphs 21-24; *see also*, page 7, paragraph 30; *see also*, page 10, paragraphs 42-44; *see also*, FIGs. 2,4.

With regard to the aspect of the invention set forth in independent claim 29, discussions of the recited features of claim 29 can be found at least in the locations in the specification and drawings cited below. By way of example, an embodiment in accordance with the present invention relates to an insulation system (*e.g.*, 10) for an oil filled environment. *See, e.g., id.* at page 4, paragraph 21; *see also*, page 12, paragraph 52; *see also*, FIG. 1. The insulation system (*e.g.*, 10) includes a plurality of insulating units (*e.g.*, 22, 24, 26, 28, 30). *See, e.g., id.* at page 12, paragraph 53; *see also*, FIG. 2. Each insulation unit (*e.g.*, 22, 24, 26, 28, 30) includes a polymeric layer (*e.g.*, 12) and a non-polymeric layer (*e.g.*, 14). *See, e.g., id.* at page 12, paragraphs 51, 53; *see also*, page 13, paragraph 56; *see also*, FIGs. 2,4. The insulation units (*e.g.*, 22, 24, 26, 28, 30) are stacked such that each non-polymeric layer (*e.g.*, 14) is disposed between two polymeric layers (*e.g.*, 12) of the insulation system (*e.g.*, 10). *See, e.g., id.* at pages 4-5, paragraphs 21-24; *see also*, page 7, paragraph 30; *see also*, page 10, paragraphs 42-44; *see also*, FIGs. 2,4. The insulation system (*e.g.*, 10) being an insulation selected from the group consisting of layer insulation (*e.g.*, 74, 84), main insulation (*e.g.*, 44), spacer insulation, end rings and any combinations thereof. *See, e.g., id.* at page 6, paragraph 28; *see also*, page 13, paragraph 55; *see also*, FIG. 4.

With regard to the aspect of the invention set forth in independent claim 33, discussions of the recited features of claim 33 can be found at least in the locations in the specification and drawings cited below. By way of example, an embodiment in accordance with the present invention relates to an insulation system (*e.g.*, 10) for an oil filled environment. *See, e.g., id.* at page 4, paragraph 21; *see also*, page 12, paragraph 52; *see also*, FIG. 1. The insulation system (*e.g.*, 10) includes a plurality of alternating layers (*e.g.*, 12, 14) of polymeric (*e.g.*, 60, 62, 64, 66) and non-polymeric materials (*e.g.*, 52, 54, 56, 58). *See, e.g., id.* at page 12, paragraphs 51, 53; *see also*, page 13, paragraph 56; *see also*, FIGs. 2,4.

With regard to the aspect of the invention set forth in independent claim 38, discussions of the recited features of claim 38 can be found at least in the locations in the specification and drawings cited below. By way of example, an embodiment in accordance with the present invention relates to an insulation system (*e.g.*, 10) for an oil filled environment. *See, e.g., id.* at page 4, paragraph 21; *see also*, page 12, paragraph 52; *see also*, FIG. 1. The insulation system (*e.g.*, 10) includes a plurality of insulating units (*e.g.*, 22, 24, 26, 28, 30). *See, e.g., id.* at page 12, paragraph 53; *see also*, FIG. 2. Each of the plurality of insulating units (*e.g.*, 22, 24, 26, 28, 30) includes a first layer of polymeric material (*e.g.*, 12) and a second layer of paper material (*e.g.*, 14). *See, e.g., id.* at page 12, paragraphs 51, 53; *see also*, page 13, paragraph 56; *see also*, FIGs. 2,4. The insulating units (*e.g.*, 22, 24, 26, 28, 30) are positioned with respect to each other such that the second layer of paper material (*e.g.*, 14) of one insulating unit (*e.g.*, 22, 24, 26, 28, 30) is adjacent to the first layer of polymeric material (*e.g.*, 12) of another insulating unit (*e.g.*, 22, 24, 26, 28, 30). *See, e.g., id.* at pages 4-5, paragraphs 21-24; *see also*, page 7, paragraph 30; *see also*, page 10, paragraphs 42-44; *see also*, FIGs. 2,4.

With regard to the aspect of the invention set forth in independent claim 42, discussions of the recited features of claim 42 can be found at least in the locations in the specification and drawings cited below. By way of example, an embodiment in accordance with the present invention relates to an insulation system (*e.g.*, 10) for an oil filled environment. *See, e.g., id.* at page 4, paragraph 21; *see also*, page 12, paragraph 52; *see also*, FIG. 1. The insulation system (*e.g.*, 10) includes a plurality of insulating units (*e.g.*, 22, 24, 26, 28, 30). *See, e.g., id.* at page 12, paragraph 53; *see also*, FIG. 2. Each insulation unit

(e.g., 22, 24, 26, 28, 30) includes a polymeric layer (e.g., 12) and a paper layer (e.g., 14). *See, e.g., id.* at page 12, paragraphs 51, 53; *see also*, page 13, paragraph 56; *see also*, FIGs. 2,4. The insulation units (e.g., 22, 24, 26, 28, 30) are stacked such that the paper layer (e.g., 14) is disposed between two polymeric layers (e.g., 12) of the insulation system (e.g., 10). *See, e.g., id.* at pages 4-5, paragraphs 21-24; *see also*, page 7, paragraph 30; *see also*, page 10, paragraphs 42-44; *see also*, FIGs. 2,4. The insulation system being an insulation selected from the group consisting of layer insulation (e.g., 74, 84), main insulation (e.g., 44), spacer insulation, end rings and any combinations thereof. *See, e.g., id.* at page 6, paragraph 28; *see also*, page 13, paragraph 55; *see also*, FIG. 4.

With regard to the aspect of the invention set forth in dependent claim 3, discussions of the recited features of claim 3 can be found at least in the locations in the specification and drawings cited below. By way of example, an embodiment in accordance with the present invention relates to the system, as set forth in claim 1, where the plurality of insulating units (e.g., 22, 24, 26, 28, 30) terminates at a terminal layer (e.g., 32, 68). *See, e.g., id.* at page 12, paragraphs 51, 53; *see also*, page 13, paragraph 55; *see also*, FIGs. 2, 4. The terminal layer (e.g., 32, 68) having thereon a third layer of a paper insulating material. *See, e.g., id.* at page 7, paragraph 30.

A benefit of the invention, as recited in these claims, is an improved insulation system for an oil filled environment via the use of polymeric materials. It was determined that polymeric materials have long-term compatibility with the various hot mineral oils and other components of construction in oil filled electrical applications, such as oil filled transformers. *See id.* at pages 5-6, paragraph 26. Additionally, polymeric materials, used alone or in combination with paper materials, also provide higher thermal stability, higher dielectric breakdown strength of as much as or greater than 300%, lower water absorption, and greater structural strength over paper materials. *See id.* These advantageous properties allow the reduction of insulation thickness for a given electrical application while maintaining equal or better dielectric performance. *See id.* Reduced insulation thickness means that more space is available for other electrical components, such as copper conductor, thus allowing more power output for a given equipment size or decreased equipment size for the same power output. *See id.* Furthermore, the lower water absorption properties of polymeric materials

reduce the costs and process time associated with paper materials. *See id.* Higher mechanical strength and low shrinkage of polymeric materials offer improved mechanical stability. *See id.* Recent reductions in the cost of polymeric materials in relation to paper materials further contribute to the potential cost savings. *See id.* Furthermore, new materials development with added functional additives/fillers into polymeric materials have significantly enhanced polymeric properties/performance. *See id.*

Additionally, alternating polymeric material with paper insulation material provides for the use of less main insulation material while maintaining the same dielectric breakdown strength as a larger thickness of paper insulation material alone. *See id.* at page 9, paragraph 37. This leads to further cost savings in the use of less copper and other magnetic materials. *See id.* Further, the alternating materials help to distribute the dielectric stress throughout the insulation system. *See id.* The paper insulation material is typically more readily impregnated by the oil of the oil filled environment than is the polymeric material. *See id.* The alternating layers of paper insulation material allow for the proper impregnation of the oil throughout the insulation system while taking advantage of the higher dielectric breakdown strength of the polymeric materials. *See id.* Proper impregnation of the oil can, in part, prevent large concentrations of dielectric stress in areas of air that may be trapped between layers. *See id.* In another example, proper impregnation of the oil may be ensured by the use of polymeric materials that have patterns thereon. *See id.* The patterns provide a roughness on the polymeric surface that allows for oil impregnation between adjacent polymeric layers. *See id.* Mechanical strength may also be improved by the use of commercially available paper insulation materials that have epoxy patterns thereon which can be used to adhere the alternating polymeric and paper layers together. *See id.*

These pending claims are clearly distinct from the prior art, as discussed below.

6. **GROUND OF REJECTION TO BE REVIEWED ON APPEAL**

A. **First Ground of Rejection for Review on Appeal:**

Appellants respectfully urge the Board to review and reverse the Examiner's rejection in which the Examiner rejected claim 33 under 35 U.S.C. § 102(b) in view of Kurita et al. (JP2001-196241, hereinafter "Kurita").

B. Second Ground of Rejection for Review on Appeal:

Appellants respectfully urge the Board to review and reverse the Examiner's second ground of rejection in which the Examiner rejected claims 1-4, 6-8, and 29-44 under 35 U.S.C. § 103(a) as being unpatentable over Schroeder (U.S. Patent No. 4,095,205, hereinafter "Schroeder") in view of Kurita.

7. ARGUMENT

As discussed in detail below, the Examiner has improperly rejected the pending claims. More specifically, the Examiner has misapplied long-standing and binding legal precedents and principles in rejecting the claims under 35 U.S.C. § 102 and 35 U.S.C. § 103. Accordingly, Appellants respectfully request full and favorable consideration by the Board, and reversal of the outstanding rejections. Appellants strongly believe that claims 1-4, 6-8, and 29-44 are currently in condition for allowance.

Additionally, Appellants believe the finality of the Office Action mailed July 13, 2006 was *improper*. Prior to the Office Action, the application was on Appeal and prosecution was reopened as directed by the panel decision issued on March 29, 2006. Appellants note that the Examiner appears to have granted the request to remove the finality of the Office Action mailed December 1, 2005. However, the Examiner made the next Office Action final. *See* Office Action mailed July 13, 2006. Accordingly, when prosecution is to be reopened, there are very limited circumstances in which the Examiner can make the Office Action final. In particular, the MPEP indicates that an Office Action can be made final upon reopening of prosecution if the new ground of rejection was (A) necessitated by amendment, or (B) based on information presented in an Information Disclosure Statement under 37 C.F.R. § 1.97(c) where no statement under 37 C.F.R. § 1.97(e) was filed. *See* MPEP §1207.04. Neither of those conditions were met in the present case. Therefore, Appellants submit that the finality of the Office Action was improper, and requested withdrawal of the finality. Although Appellants recognize that this issue is not subject to Appellate Review, Appellants would request that the Board kindly provide comment and direction on this point for the instruction of Appellants and the Examiner

A. **Ground of Rejection No. 1:**

1. **Legal Precedent**

Anticipation under Section 102 can be found only if a single reference shows exactly what is claimed. *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 227 U.S.P.Q. 773 (Fed. Cir. 1985). For a prior art reference to anticipate under Section 102, every element of the claimed invention must be identically shown in a single reference. *In re Bond*, 910 F.2d 831, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990). To maintain a proper rejection under Section 102, a single reference must teach each and every limitation of the rejected claim. *Atlas Powder v. E.I. du Pont*, 750 F.2d 1569 (Fed. Cir. 1984). The prior art reference also must show the *identical* invention “*in as complete detail as contained in the ... claim*” to support a *prima facie* case of anticipation. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 U.S.P.Q. 2d 1913, 1920 (Fed. Cir. 1989) (emphasis added). Accordingly, Appellants may point to a single element not found in the cited reference to demonstrate that the cited reference fails to anticipate the claimed subject matter.

2. **Independent claim 33.**

Appellants note that all of the rejections made in the Final Office Action mailed July 13, 2006 are at least partially based upon the Japanese reference Kurita. Because references must be considered as a *whole* for what they teach, Appellants are simply unable to determine whether Kurita does or does not teach the subject matter of the invention, or whether the reference, in fact, teaches away from the combination proposed by the Examiner. Appellants *formally requested an integral translation* of the Kurita reference so that they would be given a fair opportunity to respond to the rejections. *See* Response to Final Office Action mailed July 13, 2006. Neither the concern of the Appellants nor the request for integral translation was ever addressed by the Examiner.

However, Appellants believe that Kurita, as best understood by Appellants, fails to teach *alternating layers* of polymeric and non-polymeric materials. The Examiner appears to refer to FIG. 1 from Kurita, taken in conjunction with the English translation of the abstract. Appellants submit that one skilled in the art, given only these passages and figure, would conclude that the insulation layer 5 of Kurita includes *one* polypropylene film layer 6 and *one* kraft paper layer 7. *See* Kurita, Abstract; *see also* FIG. 1. Indeed, Kurita explicitly discloses

this conclusion in the Abstract by referring to a two layer structure. *See id.* The term “alternating layers” in claim 33, on the other hand, implies that more than simply two layers must be included in the recited structure. *See, e.g.,* Application at page 12, paragraph 53; *see also*, page 13, paragraph 56; *see also*, FIGs. 2,4. As properly interpreted in view of the specification of the present application, multiple such layers must be included. In short, it is simply impossible for only two layers to be considered as “alternating.” As such, Kurita cannot anticipate claim 33 without additional layers of polypropylene film and kraft paper that would be disposed in alternating fashion. Accordingly, Appellants submit that a *prima facie* case of anticipation has not been made out, and respectfully request reconsideration and allowance of claim 33.

B. Ground of Rejection No. 2:

1. Legal Precedent.

The burden of establishing a *prima facie* case of obviousness falls on the Examiner. *Ex parte Wolters and Kuypers*, 214 U.S.P.Q. 735 (B.P.A.I. 1979). Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention absent some teaching or suggestion supporting the combination. *ACS Hospital Systems, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 1577, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984). Accordingly, to establish a *prima facie* case, the Examiner must not only show that the combination includes *all* of the claimed elements, but also a convincing line of reason as to why one of ordinary skill in the art would have found the claimed invention to have been obvious in light of the teachings of the references. *Ex parte Clapp*, 227 U.S.P.Q. 972 (B.P.A.I. 1985). When prior art references require a selected combination to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gained from the invention itself, i.e., something in the prior art as a whole must suggest the desirability, and thus the obviousness, of making the combination. *Uniroyal Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 5 U.S.P.Q.2d 1434 (Fed. Cir. 1988).

2. Independent Claims 1, 29, 33, 38, and 42.

Appellants first note that Schroeder was used by the Examiner as a primary reference. Schroeder was cited for its teaching of multiple layers of insulating material in

an insulating unit. The insulating structure taught by Schroeder is, in fact, best illustrated in FIG. 2 and labeled with reference numeral 30. *See* Schroeder, FIG. 2. While Schroeder does teach multiple layers of polyethylene terephthalate film, this film is bounded on either side by aromatic polyamide fiber papers. *See id.* at column 7, lines 29-32; *see also* FIG. 2. That is, none of the layers of the Schroeder insulating structure are made of a non-polymeric material. In other words, both the polyethylene terephthalate films and the polyamide fiber papers are apparently polymeric materials.

Accordingly, it is presumed that the combination proposed by the Examiner would replace at least these paper layers with the kraft paper layer of Kurita. However, even if this were the case, the resulting structure would not read on that recited in each of the independent claims. In particular, all of the independent claims require polymeric and non-polymeric or paper layers. Appellants note that claim 33, as discussed above, recites the subject matter somewhat differently, relying upon “alternating layers” of polymeric and non-polymeric materials. Moreover, in somewhat similar language, the claims, excepting claim 33, further recite that these units are positioned or stacked so as to locate or dispose the non-polymeric or paper material in each unit adjacent to the polymeric material in another insulating unit. That is, the paper or non-polymeric material is alternated with the polymeric material.

The combination proposed by the Examiner would not result in such structures. Rather, it would appear that, although the Examiner is not specific on this point, the polyamide fiber paper of Schroeder would be replaced by the kraft paper layer of Kurita. Neither reference, however, teaches alternating disposition of these layers. That is, reading Kurita, one skilled in the art would not be prompted to provide *a plurality of insulating units* that include alternating materials, as noted above with respect to claim 33. Kurita simply teaches a single polypropylene film layer 6 and a single kraft paper layer 7. *See* Kurita, Abstract; *see also* FIG. 1. Similarly, nothing in either reference would prompt one skilled in the art to replace one or more of the polyethylene terephthalate film layers 42 of Schroeder with a kraft paper layer from Kurita. *See* Schroeder, FIG. 2. This replacement is simply not taught by nor is it consistent with the teachings of either reference.

Accordingly, Appellants submit that a *prima facie* case of obviousness has not been made out, inasmuch as even in combination, the references would not read on at least independent claims 1, 29, 33, 38 and 42. Moreover, all of the dependent claims are believed to be equally patentable by virtue of their dependency from an allowable base claim and for the subject matter they separately recite. Reconsideration and allowance of all pending claims are respectfully requested.

3. **Dependent Claim 3.**

While Appellants respectfully submit that each of the claims dependent on independent claim 1 is allowable for reasons set forth above, Appellants would like to specifically address an additional point regarding claims 3 (dependent on claim 1). The Examiner rejected claims 3 as obvious over Schroeder in view of Kurita. As stated above, neither reference when taken together recites the claim structure of alternating layers of non-polymeric material with polymeric material. Furthermore, claim 3 includes an additional layer, a terminal layer that includes a paper insulating material. *See* Application, claim 3. The claim recites that “the insulating units terminates at a terminal layer.” Thus, the claim explicitly claims a minimum of at least five layers of alternating insulating material. That is, a terminal layer, and at least two insulating units that include a first layer of polymeric material and a second layer on non-polymeric material. *See* claims 1, 3. Once again, Kurita simply teaches a *single* polypropylene film layer 6 and a *single* kraft paper layer 7, or only two layers. *See* Kurita, Abstract; *see also* FIG. 1. Two insulation layers cannot be understood to be five layers of insulation.

Additionally, Schroeder does not disclose five layers of insulating material, where the insulation is alternated between a non-polymeric and a polymeric material. Instead, Schroeder discloses a polyethylene terephthalate film sandwiched between two layers of polyamide fiber paper. *See* Schroeder, FIG. 2. In other words, Schroeder only teaches what can be labeled as a three layer system instead of the five layer system recited in the independent claims. Further, as discussed, none of the layers in Schroeder include a non-polymeric material. Therefore, Appellants respectfully submit that dependent claims 3 is allowable because, even if one or more of the polyethylene terephthalate film layers of

Schroeder was replaced with a kraft paper layer from Kurita, it would still not result in the claimed five layered structure.

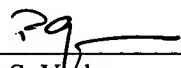
Furthermore, as discussed this claimed structure is advantageous because the paper insulation material is typically more readily impregnated by the oil than is the polymeric material. *See* Application at page 9, paragraph 37. Thus, the alternating layers of paper insulation material allow for the proper impregnation of the oil throughout the insulation system while taking advantage of the higher dielectric breakdown strength of the polymeric materials. *See id.* Additionally, proper impregnation of the oil can, in part, prevent large concentrations of dielectric stress in areas of air that may be trapped between layers. *See id.* Neither, Schroeder nor Kurita disclose the recited structure, nor is it consistent with the teachings of either reference. For at least this reason, claim 3 is believed to be allowable over the cited references taken alone or in conjunction with each other. Accordingly, Appellants submit that a *prima facie* case of obviousness has not been made out, and respectfully request reconsideration and allowance of claim 3.

Conclusion

Appellants respectfully submits that all pending claims are in condition for allowance. However, if the Examiner or Board wishes to resolve any other issues by way of a telephone conference, the Examiner or Board is kindly invited to contact the undersigned attorney at the telephone number indicated below.

Respectfully submitted,

Date: 1/29/2007



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8. **APPENDIX OF CLAIMS ON APPEAL**

1. An insulation system for an oil filled environment comprising:
a plurality of insulating units, each of said plurality of insulating units comprising a first layer of polymeric material and a second layer of non-polymeric material;
said insulating units positioned with respect to each other such that said second layer of non-polymeric material of one insulating unit is adjacent to said first layer of polymeric material of another insulating unit.
2. The system of claim 1, wherein said polymeric material is selected from the group consisting of: polyethylene terephthalate (PET), surface treated polyethylene terephthalate (S-PET), QUIN-T, QUIN-TEK, polypropylene, polyethylene, polyethylene naphthalate (PEN), polysulphones, polystyrene, polyimides, polyphenylene sulphide (PPS), polybutylene terephthalate (PBT), polyamide imide (PAI), polyether imide (PEI) and any combinations thereof.
3. The system of claim 1, wherein said plurality of insulating units terminates at a terminal layer, said terminal layer having thereon a third layer of a paper insulating material.
4. The system of claim 1, wherein said first layer and said second layer each have a thickness from about 0.5 mil to about 20 mil.
6. The system of claim 1, wherein said first layer has a first thickness and said second layer has a second thickness, a ratio of said second thickness to said first thickness is from about 0.75:1.25 to about 1.25:0.75.
7. The system of claim 1, wherein the system is selected from the group consisting of main insulation, layer insulation, and any combinations thereof.
8. The system of claim 1, wherein said plurality of insulating units is formed of a winding of said first and second layers.

29. An insulation system for an oil filled environment comprising:
a plurality of insulation units, each insulation unit comprising a polymeric layer and a non-polymeric layer, insulation units being stacked such that each non-polymeric layer is disposed between two polymeric layers of the insulation system,
said insulation system being an insulation selected from the group consisting of layer insulation, main insulation, spacer insulation, end rings and any combinations thereof.

30. The system of claim 29, wherein said polymeric layer is selected from the group consisting of: polyethylene terephthalate (PET), surface treated polyethylene terephthalate (S-PET), QUIN-T, QUIN-TEK, polypropylene, polyethylene, polyethylene naphthalate (PEN), polysulphones, polystyrene, polyimides, polyphenylene sulphide (PPS), polybutylene terephthalate (PBT), polyamide imide (PAI), polyether imide (PEI) and any combinations thereof.

31. The system of claim 29, wherein said polymeric layer has a thickness from about 1 mil to about 20 mil.

32. The system of claim 39, wherein said insulation system is layer insulation.

33. An insulation system for an oil filled environment comprising:
a plurality of alternating layers of polymeric and non-polymeric materials.

34. The system of claim 33, wherein said polymeric material is selected from the group consisting of: polyethylene terephthalate (PET), surface treated polyethylene terephthalate (S-PET), QUIN-T, QUIN-TEK, polypropylene, polyethylene, polyethylene naphthalate (PEN), polysulphones, polystyrene, polyimides, polyphenylene sulphide (PPS), polybutylene terephthalate (PBT), polyamide imide (PAI), polyether imide (PEI) and any combinations thereof.

35. The system of claim 33, wherein each of said plurality of layers of insulating material has a thickness from about 0.5 mil to about 20 mil.

36. The system of claim 33, wherein said plurality of layers of insulating material comprise alternating layers of said polymeric material and a paper insulating material.

37. The system of claim 1, wherein the non-polymeric material comprises cellulose paper, or fish paper, or ceramic paper, or any combinations thereof.

38. An insulation system for an oil filled environment comprising:
a plurality of insulating units, each of said plurality of insulating units comprising a first layer of polymeric material and a second layer of paper material;
said insulating units positioned with respect to each other such that said second layer of paper material of one insulating unit is adjacent to said first layer of polymeric material of another insulating unit.

39. The system of claim 38, wherein the paper material comprises cellulose paper, or fish paper, or ceramic paper, or any combinations thereof.

40. The system of claim 38, wherein the polymeric material is selected from the group consisting of: polyethylene terephthalate (PET), surface treated polyethylene terephthalate (S-PET), QUIN-T, QUIN-TEK, polypropylene, polyethylene, polyethylene naphthalate (PEN), polysulphones, polystyrene, polyimides, polyphenylene sulphide (PPS), polybutylene terephthalate (PBT), polyamide imide (PAI), polyether imide (PEI) and any combinations thereof.

41. The system of claim 29, wherein the non-polymeric layer comprises cellulose paper, or fish paper, or ceramic paper, or any combinations thereof.

42. An insulation system for an oil filled environment comprising:
a plurality of insulation units, each insulation unit comprising a polymeric layer and a paper layer, insulation units being stacked such that the paper layer is disposed between two polymeric layers of the insulation system;

said insulation system being an insulation selected from the group consisting of layer insulation, main insulation, spacer insulation, end rings and any combinations thereof.

43. The system of claim 42, wherein the paper layer comprises cellulose paper, or fish paper, or ceramic paper, or any combinations thereof.

44. The system of claim 42, wherein the polymeric material is selected from the group consisting of: polyethylene terephthalate (PET), surface treated polyethylene terephthalate (S-PET), QUIN-T, QUIN-TEK, polypropylene, polyethylene, polyethylene naphthalate (PEN), polysulphones, polystyrene, polyimides, polyphenylene sulphide (PPS), polybutylene terephthalate (PBT), polyamide imide (PAI), polyether imide (PEI) and any combinations thereof.

9. **EVIDENCE APPENDIX**

None

10. **RELATED PROCEEDING APPENDIX**

None